

A.D. 1894. APRIL 15. NO. 7711.

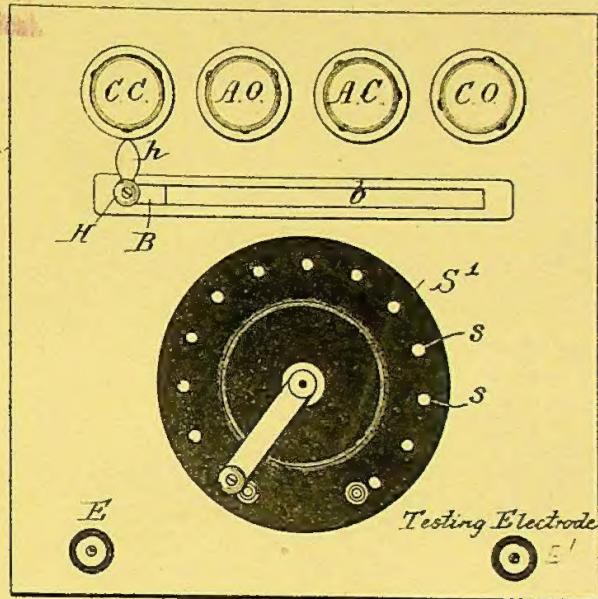
BISHOP'S COMPLETE SPECIFICATION.

British 17711
495-3-G B1894

(1 SHEET)

174. ELECTRICITY.
Medical and Surgical.

Fig. 1.

movable
contact

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 2.

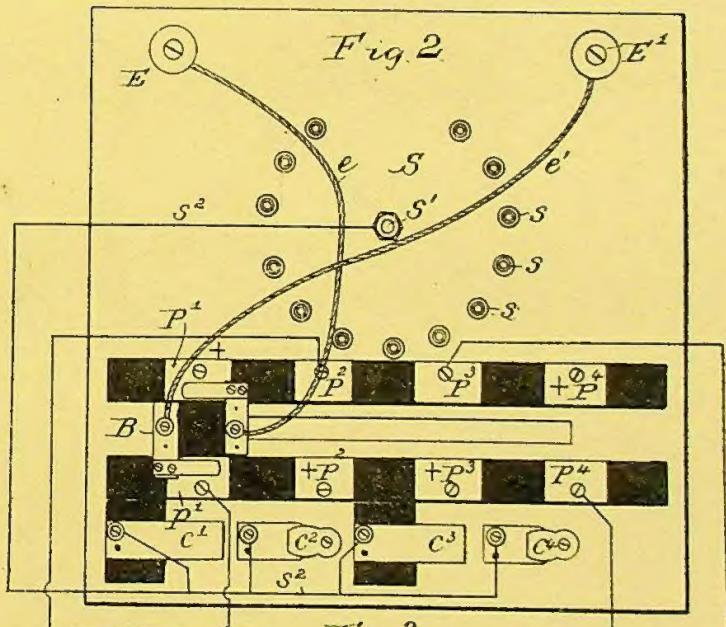
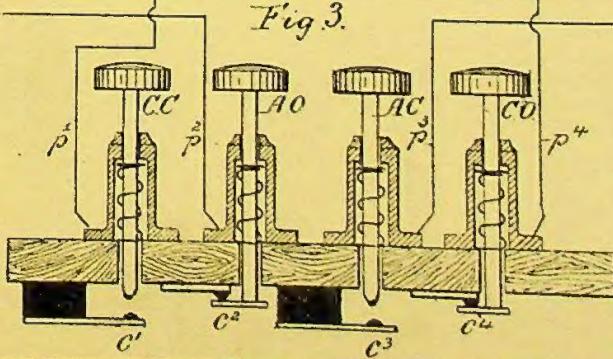
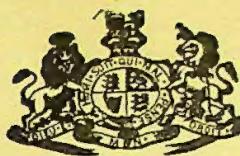


Fig. 3.



N° 7711



A.D. 1894

Date of Application, 18th Apr., 1894

Complete Specification Left, 18th Jan., 1895—Accepted, 2nd Mar., 1895

PROVISIONAL SPECIFICATION.

An Improved Arrangement of Element Board for Electro-therapeutic Diagnosis.

I, WILLIAM JAMES BISHOP, of 74, George Street, Croydon, in the County of Surrey, Electrician, do hereby declare the nature of this invention to be as follows:—

My invention relates to element boards or apparatus for use with continuous electric currents in electro-therapeutic diagnosis for the purpose of ascertaining and testing the muscular contractions caused by polar reactions.

Hitherto in medical batteries various forms of commutators and current interruptors have been employed, all of which have owing to their complications and mechanical defects given rise to mistakes when testing for muscular contractions.

10 For example, in the usual switch form of current interruptor if the contact pin head has become worn and concave, instead of a true "make," it is easy to get first a "make," then a "break," and finally a "remake" of the circuit during the movement of the lever over the defective pin head, whereby the contraction (which ought to have been ascertained at the moment of closure) is or may be truly due to 15 the "break" caused by the deformation of the pin head.

The object of my invention is to effectually remedy and obviate such defects, to simplify the apparatus, and to facilitate and render accurate the work of the operator.

By my improved arrangement of element board the manner in which the four 20 current disturbances [by the normal formula, cathodal closure contraction (C.C.C.), anodal opening contraction (A.O.C), anodal closure contraction (A.C.C.), and cathodal opening contraction (C.O.C.)] are obtained is simple, efficient, and not necessarily involving any highly scientific attainments. The cells of the battery are connected to a dial collector or rheostat provided with a handle in the usual 25 way for varying the current strength. Upon the board the binding screws of the testing electrodes are fixed, and according to my invention these are flexibly connected to a rubbing contact block capable of sliding over four separate poles in such manner as to change the polarity of the testing electrodes at each movement. These poles are each separately electrically connected with a moving manual device 30 such as a plunger which may advantageously be marked with the formula or symbol of muscular contraction which it will test.

The four manuals are adapted two to "make" and two to "break" the circuit as and when required. The sliding contact block is furnished with an operating handle and may have a pointer indicating the manual to which it is opposite or connected 35 for the time being.

The patient being suitably placed in the circuit, on operation of that manual of the element board which is opposite to the sliding contact block the condition of the circuit is changed, and then by gradually increasing the current strength by the rheostat the first manifestation of the specific muscular contraction sought for will 40 be at once observed.

Dated this 18th day of April 1894.

J. C. CHAPMAN,
Agent.

COMPLETE SPECIFICATION.

An Improved Arrangement of Element Board for Electro-therapeutic Diagnosis.

I, WILLIAM JAMES BISHOP, of 74, George Street, Croydon, in the County of Surrey, Electrician, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

My invention relates to element boards or apparatus for use with continuous electric currents in electro-therapeutic diagnosis for the purpose of ascertaining and testing the muscular contractions caused by polar reactions.

Hitherto in medical batteries various forms of commutators and current interruptors have been employed, all of which have owing to their complications and mechanical defects given rise to mistakes when testing for muscular contractions. For example, in the usual switch form of current interruptor, if the contact pin head has become worn and cuneate, instead of a true "make," it is easy to get first a "male," then a "break," and finally a "remake" of the circuit during the movement of the lever over the defective pin-head, whereby the contraction (which ought to have been ascertained at the moment of closure) is or may be truly due to the "break" caused by the deformation of the pin head.

The object of my invention is to effectually remedy and obviate such defects, to simplify the apparatus, and to facilitate and render accurate the work of the operator.

By my improved arrangement of element board the manner in which the four current disturbances [by the normal formula, cathodal closure contraction (C.C.C.), anodal opening contraction (A.O.C.), anodal closure contraction (A.C.C.), and cathodal opening contraction (C.O.C.)] are obtained is simple, efficient, and not necessarily involving any highly scientific attainments.

I will describe my invention in reference to the accompanying drawings in which

Fig. 1 is a plan of the board;

Fig. 2 an inverted plan; and

Fig. 3 a cross section of manuals and contacts.

The cells of the battery (which is not shown) are placed in series, and the negative poles connected consecutively to the studs *s. s.* of a dial collector or rheostat which may be constructed as illustrated at *S* with a handle *s¹* for varying the current strength, or it may be of any suitable kind. *E. F¹* are the binding screws of the electrodes fixed upon the board, one of which *E¹* is the testing electrode, the connection from which leads to the rheophone. These electrodes according to my invention are flexibly connected electrically by wires *e. e¹* to a rubbing contact block *B* arranged underneath the board and capable of sliding over four separate poles *P¹ P² P³ P⁴*, each of which is separately connected to the + pole of the battery. These four poles are each also separately electrically connected by wires *p¹ p² p³ p⁴* respectively to convenient parts of the four moving manual operating devices, the contact pieces *c¹ c² c³ c⁴* of which are also connected by wire *s²* to the rheostat handle *s¹*. Any suitable form and arrangement of operating device may be employed, but I have shown four spring-return plungers which may advantageously and in the drawing are marked respectively with the symbol of muscular contraction above defined which each will test. The four manuals are adapted two to make and two to break the circuit as and when required. The contacts of C.C. and A.C. are normally open, and operation will close the circuit respectively through *c¹* or *c³*; those of A.O. and C.O. are normally closed, and operation will open the circuit respectively through *c²* or *c⁴*. The sliding contact

Bishop's Improved Arrangement of Element Board for Electro-therapeutic Diagnosis.

block B is furnished with an operating handle H passing up through a slot b in the board, and it may have a pointer such as h indicating the manual to which it is opposite or connected for the time being.

The patient being suitably placed in the circuit, on operation of that manual of the element board which is opposite to the sliding contact block the condition of the circuit is changed, and then by gradually increasing the current strength by the rheostat the first manifestation of the specific muscular contraction sought for will be at once observed.

By a modified arrangement of mechanism I am able to obtain the desired test connections by the sliding block only, and without the use of supplementary manuals above described, but there are certain drawbacks to such an adaptation and I prefer the arrangement above specified.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is :—

The improved arrangement and method of operation of element board for electro-therapeutic diagnosis substantially as above described and illustrated in the accompanying drawings.

Dated this 18th day of January 1895.

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For the Applicant,

J. C. CHAPMAN,
70, Chancery Lane, London, W.C., Chartered Patent Agent.